PROFESSIONAL ENGINEER

Official Publication of American Association of Engineers

FALL ISSUE

Dr. Gustav Egloff addressing students at the Springfield, Missouri, High School, October 13, 1952, under the auspices of the Oil Industry Information Committee, Missouri-Iowa-Nebraska District. Dr. Egloff displayed and explained items derived from chemicals. In two morning sessions he spoke to 2200 students.

Vol. 38 No. 2

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"The Voice of the Engineer"

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M. E. McIVER, Editor

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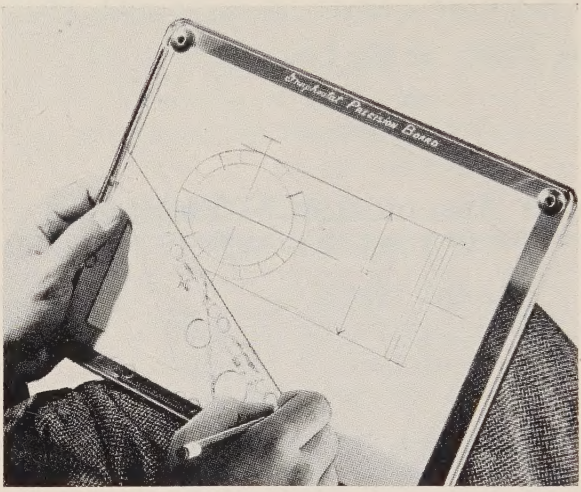

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Starting Off on the Right Foot

American Association of Engineers was founded by young engineers, who, after a few years' experience in the business world, felt that the members of their profession were not receiving proper recognition. One of the first major activities of the Association was the establishment of student chapters in engineering schools and colleges. The first such chapter was formed at the University of Illinois by the late Dr. Frederick H. Newell, remembered as the "Father of the U. S. Reclamation Service".

It was Dr. Newell's belief that early in their careers, engineering students should be acquainted with the many social and economic problems that they would encounter in the business world. He advocated less emphasis on the various branches of the profession, and more understanding of the Engineer as a professional man.

While it is essential that a young engineer be well grounded in all engineering subjects, it is important, if he is to reach his full stature as a professional engineer, that he be able to think for himself, to speak in public, to handle men, money and materials efficiently and economically.

As he embarks on his career the young engineer should take an active interest in civic and community affairs. He should get acquainted with his fellow men, enlarge his circle of friends, both socially and professionally. Join a local service club, as well as an engineering society. In an A.A.E. Student Chapter he will learn that these things are an essential part of his professional education.

We find many leading engineers in A.A.E. giving help and guidance to student engineers and groups. In this issue we mention only four, all men eminent engineers in their respective fields, Dr. David B. Steinman, world renowned bridge engineer; Dr. Gustav Egloff, Director of Research, Universal Oil Products Company, world famous for his many important contributions to the oil industry; Dr. H. A. Wagner, who has practiced as a mining and metallurgical engineer on all five continents, and who has devoted many years, and Gurdon M. Butler, Dean of Engineering, Emeritus, the University of Arizona, who wholeheartedly believed in an all-inclusive engineering chapter on the campus.

In 1921, under his leadership, every one of the 208 student engineers enrolled at the University of Arizona joined the A.A.E. Chapter, thus winning the Association's first silver cup.

To engineers who have the time and the inclination, there is no greater satisfaction than working for and with young engineers.

Editor

The Faith of an Engineer

A Message for Young Engineers

By D. B. Steinman

Consulting Engineer, Past President and Life Member A.A.E.

The Engineer is a builder. He builds his dreams and the dreams of his fellowmen into enduring realities.

There is a beautiful and impressive legend—so old that its origin has been forgotten. It goes like this:

Four men stood up with God when he made the world. They saw the nebulous mass take form under the hand of the Creator; and they watched with wonder as the shimmering sphere, flung from the fingers of Omnipotence, found its place in the shining galaxy of stars.

Blinded by the sublime spectacle, the men fell down in humble worship. And God said to them: "Rise, and fear not." And they rose and faced the Master with the new-born questions and ambitions that fired their souls.

And one of the men asked: "How was it done?" and God replied "Go, find out for yourself." And that man went and became the *Scientist*.

"Give it to me," the second man begged. And God said to Him: "Go, possess it for yourself," and he went and became the *Business Man*.

"How beautiful!" exclaimed the third man. To him God said: "You shall go and, because your soul burns within you, you shall create Beauty!" And that man went and became the *Artist*.

The fourth man said nothing but, as his eyes followed the unfolding of the plan of Creation, there kindled in his heart a desire to do these things. And to him God said: "You, too, shall go, and you shall plan and build. You shall learn to master the forces I have called forth, and you shall *continue the work of Creation!*" And that man went and became the *Engineer*.

And thus this noble group of God's Journeymen set out upon their appointed tasks. The Engineer ran before the others to straighten the path for their feet. He blazed the trail through trackless forest and impenetrable jungle, over jagged mountains and across torrential streams. He cleared away abstacles, broke down barriers, and spanned the chasms that halted their progress. He explored the far places and the depths of the Earth for the materials the Journeymen needed, and he fashioned the tools for their work. He devised shelters to protect them from the elemental forces of Air, Earth, Fire and Water, and he harnessed these to lighten the toil of Man. With head and heart and hand, he wrought and contrived to ease the task of his fellow Journeymen and to multiply the fruits of their labors.

With the Truths discovered by the Scientists, the Wealth garnered by the Business Man, and the Beauty dreamed by the Artist, the Engineer

Dr. David B. Steinman

internationally known consulting engineer, president of the New York Academy of Sciences, author, lecturer, and inventor, has a magnanimous record in the financial help and inspiring encouragement he has given college students.

Since 1920, he has been in private practice and has served as designing or consulting engineer in the construction of many notable bridges on five continents.

He is a life member of the American Association of Engineers, and a past president.

erformed ever greater miracles—rearing the resplendent structure of ivilization and Human Progress.

And thus the Engineer goes on through the ages—overcoming obacles, conquering new forces, and reshaping the physical world. Unaring of his energy, he plans and toils to create comfort, wealth and ppiness for his fellow-wayfarers. He is the pioneer and the leader in the ward march of Civilization.

With the successful achievement of each new monumental task, the ngineer has grown in strength, and greater responsibilities and tasks have en entrusted to him. Today he has to be Scientist, Artist and Business an, as well as Engineer. All four are now embodied in him and find pression in his creative genius. He works from vision to deed, and he plies Science and Business and Art in building his dreams into enduring alities. He plans and builds not only for his time, but for the generations follow.

Every man's philosophy of life is the product of his experiences. This especially true of the professional man. His faith, his dedication, and

his devotion to his profession are the products of the experiences that hav shaped his life.

To me Engineering has been a succession of inspiring influences, o impelling ambitions, of obstacles overcome, and of dreams come true. Th realization—one after another—of dreams that seemed hopeless leav me reverent and humble.

My career in bridgebuilding is a boy's dream come true. I grew up i the shadows of the Brooklyn Bridge. As a boy, I loved to walk over th span and to explore its marvels. I was awed by its vastness, by the majest of the towers and by the power of the cables; and I was fascinated by a the details of the construction—the anchorages and the cables, the trussin and the beams, the stonework of the towers, and the magic of the radiatin stays. I came to know the great structure intimately and reverently. T me it was truly a "miracle bridge"; and, as I wondered how so marvelou a work could have been created, I was fired with the ambition to becom a builder of bridges. In a background of poverty, this far-flung ambitio seemed beyond the possibility of attainment. But the inspiration of th bridge had entered my heart, and my dream came true!

An important element in life is loyalty. Our lives are shaped by o loyalties—to our family, our friends, our school, our church, our professio our community, our country—but one loyalty I would place high in th list is *loyalty to our youthful ideals.* Only by keeping to our goal of inspir tion can we scale the heights.

From my earliest experiences I formulated a guiding philosophy life crystallized in two simple propositions. The first is this:

"There is no excellence without effort."

The second is equally simple:

"No true effort is ever wasted."

To these I may add a correlated truth that has always been in m consciousness: *"The world makes way for the man who knows what wants"*—provided he is willing to pay the price in toil and striving an sacrifice.

In whatever we do—in whatever we build—beyond the stone and th steel, the calculations and the plans—the one priceless ingredient is *th spirit of consecration.* That includes the qualities of vision, devotion, i spiration, and integrity.

The whole thought is beautifully expressed in the words of Joh Ruskin:

"Therefore when we build, let us think that we build forever. Let not be for present delight, nor for present use alone. Let it be such wo as our descendants will thank us for, and let us think, as we lay stone upo stone, that a time is to come when those stones will be held sacred becau our hands have touched them, and that men will say, as they look upo the labor and wrought substance of them, 'See, this our fathers did for us.'

Students! Know the
"Professional Facts"

Dr. H. A. Wagner, Past President, American Association of Engineers

RESHMAN year of a pre-engineering course is not too early for future engineers to begin learning the professional facts of life, "Professional cts" will not be listed in the catalogue as a required course; such a course not even offered as an elective. Professional facts are only incidental in e programs of most of the extra curricular engineering organizations on e campus. Yet an understanding of these facts is essential to success in e practice of engineering, because engineering is not only a "profession" "calling"—it is, it must be, a method of earning a livelihood. In no pro-ssion can financial returns be the only motivation or the first consideration. American Association of Engineers believes that technological knowl-ge and skill and adherence to the highest standards of professional practice e matters of cardinal importance. No engineer really succeeds, no engi-er deserves to succeed unless he has that native flair for mathematics and actical science which will permit him to master the fundamental principles engineering, and apply them intelligently.

No engineer succeeds or deserves to succeed who does not fully under-nd and accept the standards of conduct imposed by membership in a ofession. But there are a great many soundly trained, competent engi-ers, imbued with the highest professional ideals, who have found engi-ering less rewarding in a financial way than vocations they might have osen which require far less training, native ability, and consecration.

There are two reasons why a great majority of men who qualify for ctice of engineering through training and experience receive compensa-n not at all commensurate with the rigorous training it requires and the vices performed. One of these reasons, however, is more or less an out-wth of the other.

First of all, engineering training is so concentrated upon technology t it induces a mole-like preoccupation with the pure technique of engi-ring, and fails to develop the business sense, the understanding of eco-nics, the group solidarity, the awareness of non-technical social responsi-ties that are instilled into members of other professions. Second, and condition is a result, in some degree of deficiencies in engineering train-engineering is regarded not as one profession, but as a federation of nches of engineering; it is also undefined in scope, merging with the nical crafts at its outer edge, and unrealistically delimited by its regis-ion laws.

This lack of unity in engineering is due in part to the sharp differentia-of branches which begins on the campus of engineering schools. There

is no standard "last" over which engineers are made. Undergraduate train ing is not confined to fundamentals; specialization begins very early an sometimes at the expense of sound training in broad fundamentals. In col lege, therefore, engineers begin to think of themselves as civil engineers o mining engineers, or mechanical engineers, rather than as *professiona* engineers. The condition is intensified after graduation.

This system leads to a sort of subserviency to eminence, rather than t fraternalism. Engineers are from the very beginning prone to believe tha the degree of eminence is the measure of professionalism. They seek i their societies not fraternalism, but prestige, an opportunity to be identifie with an aristocratic and distinguished organization, and to be associate however perfunctorily, with the admitted leaders of the profession.

American Association of Engineers was organized to supply certai deficiencies in engineering training, to offset certain weaknesses in engineer ing temperament, and to counteract some very dangerous and widely ac cepted fallacies about the nature of "professionalism." The Associatio was formed to enable engineers of all branches of the profession, in a stages of professional development, to cooperate in a single, truly fraterna organization, for improvement of the economic status of all members of th profession, for development of the personal efficiency of individual mem bers, for organized service to their communities and the nation, and fo integration of the engineering profession.

Before A.A.E. was organized there was a tabu against any organize effort to improve economic status. Any organized effort to increase salarie and fees was dubbed "unprofessional" by the conservatives who the dominated all technical societies. American Association of Engineers prove that members of the profession could through organization raise salarie and fees, set up standards of classification and compensation, classify serv ices and establish schedules of fees, and that all these things could be don by methods consistent with the highest principles of professional conduc It was American Association of Engineers that first codified principles o professional conduct and enunciated a code of ethics and sponsored a vo of service. It was American Association of Engineers that first attempte a classification of engineering schools and urged broadening of the cur riculum. It was the first organization that aggressively supported th registration movement.

American Association of Engineers was the first organization to insti tute an employment service, and it was violently criticized for so doing o the grounds that such an activity was vulgar and unprofessional. Never theless, the Association has used that department as a laboratory in whic it has assembled authentic data for studies of the market for engineerin services, as an agency for vocational guidance, and as a lookout station t observe trends and thus secure advance information for members of th profession.

American Association of Engineers was the first national organizatio to establish student chapters in engineering colleges. In the A.A.E. chap

gineers at birthday celebration at Swedish Engineers' Club, for Herman A. Wagner. Reading from ht to left: Ken Hobbie, Dr. Herman Bloch, Dr. Egloff, Dr. Wagner, Don Black, Wm. J. Mauer, Robert con, Jean Reinecke, Robt. J. Gnaedinger, Mark Kalischer, Charles Becker, Sig. Fecht, Clarence ben, and Paul Smith

rs all engineering students recognized fraternal ties which transcended lyalty to a particular branch, and which made all the students, freshmen well as seniors, part of a single, thoroughly unified professional organ- ation. In these chapters students rounded out their training, securing in eir meetings and programs training in "professional" as distinguished om technical problems not covered by their credit courses. American ssociation of Engineers is still prepared to do these things.

In another vital way, A.A.E. student chapters differ from others. A.E. chapters are pledged to devote a major part of their time and atten- n to "economic and professional problems." In an A.A.E. chapter you n and should learn about the market for engineering services; this means at you will study A.A.E. surveys and reports which show the qualities, e services, the personal attributes, that bring a premium in the market — indicated in the demands made by employers when they ask A.A.E. to ate engineers of particular types for specific jobs.

You will learn how to write a letter of application for a position, how to epare an effective experience record, how to apply in person for a position, hat salary you can reasonably expect. You will learn how the Federal bor laws affect you, and what stake you have in the Government's Social curity program. You will study our registration laws and learn how to alify for registration and what advantages may be derived from it. You ll learn about non-technical vocational opportunities in fields where your gineering training is only a background but commands a premium. You

will be urged to learn something about accountancy, business law, and gen eral economic conditions and told why it will be profitable to extend you collegiate training by means of such courses. You will be encouraged t study and practice public speaking.

You will be asked to investigate the many opportunities for civic serv ice—especially those in which engineering training is a unique advantage You will be told why capable performance of civic services –beyond th line of duty—can be profitable as well as innately satisfying.

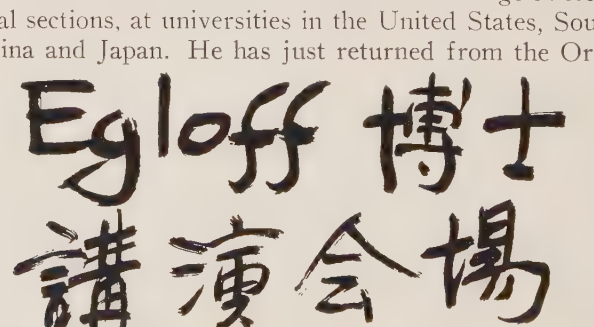
A.A.E. which operates its student chapters on a no-profit plan (excep for the loyalty it engenders in men who will eventually become loyal mem bers and the leaders it trains in student chapters) is glad to sponsor studen chapters, but does not want them to content themselves with a purely socia program, or devote all their time to visiting engineering projects. Instea A.A.E. wants its student chapters to embrace its four-point programs an try, through study and investigation, to learn more about that progra which is summed up in A.A.E.'s purpose stated many times.

There are Opportunities

For Young Engineers in the Oil Industry

Dr. Gustav Egloff, Director of Research of the Universal Oil Produ Company, Chicago, is one of the most widely known figures in the ent petroleum industry. He is the recipient of more than 25 honors, author co-author of eleven books dealing with various aspects of petroleum che istry and refining. Some 300 patents have been issued to him in the Unite States and abroad relating to processing of petroleum oil, coal, shale oi and chemical derivatives of hydrocarbons, inventions which have assiste greatly in promoting the happiness, comfort and well-being of humanit His particular interest has been in the cracking and refining of petroleu some of his inventions have been used in the oil industry for many years

Dr. Egloff has addressed numerous national meetings of technical socie ties and local sections, at universities in the United States, South America Europe, China and Japan. He has just returned from the Orient.



From Japan Dr. Egloff was kind enough to send us the placard used by the Japanese t direct listeners to the meeting at which he was the principal speaker. It looked like this

r. Gustav Egloff

Dr. Egloff is one of the orld's most distinguished chem- ts. He was graduated from ornell University in 1912, re- ived an M.A. degree from olumbia University in 1913, d a Ph.D. degree from olumbia in 1916.

He was named one of the Modern Pioneers" by the AM. in 1940, and in 1943, ceived Columbia University's edal for Excellence. The Na- nal Research Council award- him its Distinguished Service ward in 1941, and he received Citation from the War De- rtment in 1946.

Dr. Gustav Egloff

Believing that education should continue after formal schooling, he lped to organize and has served as chairman of the Western Society's rum for Young Engineers. As President of the Chicago Technical Coun- he took an active interest in the Career Conference established for the rpose of encouraging high school graduates to enter the field of science d industry by entering technical universities and colleges.

He was one of the first in the industry to declare that atomic energy is in no position to seriously impair oil's eminence as an energy source-- least in the foreseeable future, and time is proving him correct.

"The petroleum industry will have an even greater impact on the chem- l industry in the future than it has had in the past," says Dr. Egloff. bout 100 years ago, Professor Benjamin Silliman of Yale made the first ntific analysis of oil which was instrumental in the founding of the in- stry. Since then, chemists and chemistry have played an increasingly im- tant role in the growth and betterment of the industry.

"The petroleum industry is moving ahead rapidly in volume of prod- s, dollar expenditures, and technical know-how. With total gross assets $33 billion, it ranks fourth in the United States. Only agriculture, rail- ds and public utilities are larger. This figure does not include natural which is rated as the sixth largest industry with total investments in nts and equipment of $9 billion.

"The oil industry offers unlimited opportunities to chemists and chem- engineers. As a result of its competitive vigor and research-mindedness, petroleum industry is continually broadening its horizons. With each development, the way is opened for many more."

A.A.E. Student Chapters

By G. M. BUTLER,

Dean of Engineering, Emeritus, University of Arizona

One of the Association's founders, interested in student engineers, is G. M. Butler. His prestige as an educator, as an engineer, and as a student pre-eminent in research, coupled with dynamic personality, made him an outstanding leader in A.A.E.'s student activities in its formative years. His advice to students as published in PROFESSIONAL ENGINEER *from time to time can well be restated.*

IT HAS been well said that "the industries have gain as their principal aim, while the professions have service as their lodestar with gain as a by-product." Until engineers recognize the truth of this statement and mold their lives upon the ideal of unselfish service, they are not and cannot claim to be professional men. In the constitutional statement of the objects of the Association is the phrase: "To stimulate and encourage public service in the engineering profession." This activity is a very real and important function of A.A.E., and it is being exemplified through the work of chapters and individual members.

As an officer of a student chapter, a committeeman, or an active participant in programs, a student has an exceptional chance to serve his fellows and to contribute his mite to a movement intended to place engineering on a higher plane. A student chapter of the Association offers to members a fine chance for self-development.

Outstanding success as an engineer is not due so much to unusual technical talent as it is to personal qualities that the classroom does little to develop, such as the ability to speak forcefully and convincingly in public, and the possession of a high sense of honor, initiative, administrative ability, a well developed sense of responsibility, abounding energy, a willingness to do more than enough barely to "get by," intelligent optimism, tact, and sincerity. Young men responsible for the proper functioning of a student chapter have a real opportunity to develop these qualities. Not an easy job, to be sure, but no person can accept responsibility for some phase of chapter work and do well the job entrusted to him without benefiting materially. It should not be forgotten that "he profits most who serves best."

The American Association of Engineers is using its strength and influence to gain general recognition of the undoubted fact that civilization is more indebted to engineers for the comforts and conveniences of daily life than to any other group of men. It is seeking assiduously to gain for the profession the standing it deserves and must inevitably receive when the facts are known and appreciated. It is taking steps to put men in positions in which they will be most contented and can render the maximum of service to their employers and to the public.

It is encouraging its members to recognize their civic responsibilities and to seek public offices in which their unique talents may be used for the benefit of their fellow men. It is mainly responsible for the passage in many states of engineering registration or licensing laws.

It is energetically endeavoring to raise the ethical standards of its members so that they will be more worthy of the high regard they are certain eventually to receive in this the "Age of the Engineer."

The many older engineers who are working so devotedly in the Association do not expect to receive much, if any, benefit from their activities. It is the engineering student of today who is mainly going to profit from their efforts.

Surely, it is both the privilege and the duty of every engineering student to belong to A.A.E. and to work actively in a student chapter.

The New Haven College Chapter

It is always a pleasant surprise to get an interesting letter from an officer of one of our student chapters, unsolicited, announcing the start of fall activities. It indicates interest, aggressiveness, and business ability.

Such a letter came to Headquarters early in October from William H. Pantalone, and here's what he had to say:

"The year 1952-53 has been another successful year for the Engineering Society at New Haven College. The activities included speakers, socials with invited wives and girl friends, a number of plant visitations in diversified industries, and a 'bang-up' annual dinner meeting at Donat's Tally Ho Inn.

We have held our first 1953-54 executive board meeting and have planned a fine program for the year. Here's the type of industries we plan to visit, all lined up by Bill Gore: helicopters (Sikorsky), rubber products, paper board and boxes, and steel and brass mills. We have also planned for a trip to Yale's Planetarium.

We are proud to have chosen Mr. Igor I. Sikorsky as our first honorary member of the local chapter. Mr. Sikorsky has addressed our chapter on his favorite subject, aeronautics, at which time he expressed his appreciation for the honor bestowed upon him by our society.

We extend you our good wishes. I'll be writing again."

Thanks, Mr. Pantalone, and lots of luck. We'll be looking for your next letter . . . . don't disappoint us!

Prof. William E. Milligan of Yale University Metallurgical Laboratory is advisor to the group, and new slate of elected officers consists of: Charles Swan, Chairman; William N. Pantalone, Vice Chairman; Clifford Nitchke, recording secretary; Alexander Possidente, treasurer; William G. Hoffman, corresponding secretary; William T. Gore, Chairman, Program Committee, and Grant A. Briggs, Chairman, Membership Committee.

Long Beach Chapter

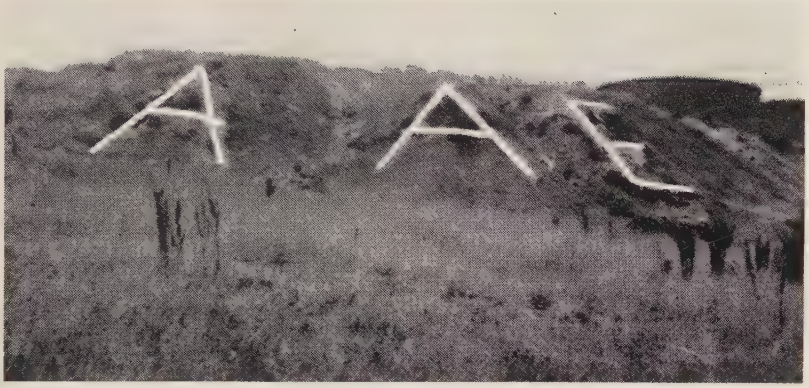
The Student Chapter of the American Association of Engineers at Long Beach College is composed of a group of aggressive, persistent young men. Seven years ago the student engineers decided to give their engineering society some big publicity. The boys, by considerable hard work, spelled out the initials "AAE" in letters 55 feet high on the east side of Signal Hill, using white-washed rocks. But, alas, members of rival campus clubs, in several night raids, bounced the rocks out of position and re-arranged them in the shape of their own emblems. This annoyed the engineers and they decided to do something about it.

The project was written up in the "Long Beach Press Telegram" with photographs accompanying, showing the A.A.E. student members at work rebuilding the sign. Bud Lembke reported the story, as follows:

"Determined to have a boulder front and to make up for the deliberate affront, the engineers realigned the rocks in their original formation, sticking them down in a light layer of concrete.

"Still the letter razing continued. An unidentified band of rock-ribbed raiders used heavy blunt instruments the night of March 24th to demolish the A.A.E. landmark. Early this year, with picks, shovels, hammers, sledges and trowels, the A.A.E. student engineers began work to re-initial the hill

Student Engineers, Long Beach College, at work rebuilding Association letters "AAE"



The five-foot A.A.E. letters on Signal Hill as seen from the air.

They think nothing short of a bomb will remove their new construction, consisting of concrete letters a foot thick anchored in a six-inch-deep foundation reinforced with iron rods driven eight to ten feet into the ground.

"The persistent engineers have had to solve problems that would challenge a graduate engineer, such as estimating material needed, digging trenches and working on a 55-degree slope and transporting concrete from the mixer truck at the top of the hill to the pouring area."

Writes Donald Wells, Vice President of the Chapter: "We feel that the sign is quite immune to further destruction mainly because the letters are now solid concrete with oil well sucker rods ¾ inches in diameter in the middle for reinforcement. The sign completion was celebrated with a party. George Hensley, Sophomore engineering major, supervised the work, but every member of the chapter participated in one way or another."

Earl Garrison is President; Donald Wells, Vice President; Ralph Reece, Recording Secretary; Chuck Youde, Corresponding Secretary, and George Hensley, Treasurer.

Chaffey College

As usual, Chaffey College Chapter, A.A.E., started off this fall in a big way. The first meeting of the season was a dinner on October 6th, when the new members were inducted and officers elected.

Headquarters was indeed sorry to learn that Arthur E. Flum, who had sponsored the group for so many years in such an able manner, would no longer serve in that capacity. But we are glad that he is still a member of the college faculty. He has been a real friend to the boys, an efficient Chapter leader.

Mr. Flum has been appointed Dean of Admissions and Educational

Advisor at Chaffey, entailing many additional duties. Mr. Ray Webb, Engineering Instruction, and Lewis Grimm, Physics Instructor, will sponsor the group in the same efficient manner as did Arthur Flum.

Our best good wishes go to Mr. Flum in his new position and as always, we shall welcome an opportunity to be of service to him and the college.

To Mr. Webb and Mr. Grimm, our services are at your command! Good Luck!

Lawrence M. Lawson Marks Up 50 Years Service

An example of an Engineer who made good by knowing the "professional facts."

Members of the American Association of Engineers who attended the El Paso Convention "away back when" will remember Lawrence M. Lawson because of his friendly smile and the very efficient manner in which he entertained the delegates, and visiting engineers from Mexico. That was a convention never to be forgotten.

Mr. Lawson, International Boundary and Water commissioner this summer completed 50 years in government work . . . a remarkable record by a remarkable engineer. "The El Paso Herald" published a little story about Mr. Lawson's achievements, which we are passing on to A.A.E. members, because here and there the reporter in simple phrases gives the reader a picture of the man who has served so efficiently, and who has made so many friends on both sides of the border. His successful career is an inspiration as well as a challenge to the young engineer of today.

"Mr. Lawson's long and distinguished engineering career began in 1901, when he took a job as assistant engineer of the San Francisco Water Supply. The following year he shifted to Los Angeles, taking a U. S. Civil Service post as pydrographer's aide for the U. S. Geological Survey. Thereafter he chose to remain in government service, although he had many opportunities to enter private industry. In 1913 he came to El Paso as project engineer for the Rio Grande Reclamation Project, and in 1924 was appointed engineering representative on the U. S.-Mexico International River Control Committee.

"In 1927, because of his familiarity with border problems, as well as his engineering ability, he was appointed by President Coolidge as Commissioner of the International Boundary Commission, American Section, with the Department of State.

"His first commission job was the straightening of the Rio Grande between El Paso and Quitman Canyon. This $6 million job started in 1934 and was finished in 1938.

"Mr. Lawson dislikes what he terms 'personal publicity.' He sits quietly peering at his visitor with mild blue eyes and 'rolls his own' cigarets. He got that habit while surveying in the field as a young engineer.

"He was born in Washington, D. C. but got his engineering degree from Leland Stanford University.

"What was the one job that Mr. Lawson liked best in his long career as an engineer? 'The one that took the most exacting study and the most time to negotiate, the International Water Treaty with Mexico of Feb. 3, 1944,' he said.

" 'We had been fortunate in Mexico's selection of their commissioner and his staff. They have been fine technicians with fine engineering training and very co-operative.'

"Construction of the giant Falcon Dam below Laredo, resulted from the treaty, among other projects. Other highlights in the career of Mr. Lawson as commissioner, include: the $4 million

canalization project above El Paso. Caballo Dam was built to fit in with Elephant Butte hydroelectric development. Plans made by Mr. Lawson, and approved, for Lower Rio Grande and Nogales, Ariz., flood control. Sanitation projects at Nogales, Tijuana, and elsewhere on the border. Completion of the $1,200,000 American Dam at El Paso in 1938.

"Mr. Lawson, contrasting engineering today with that of 25 years ago, said the Boundary and Water Commission today is an 'engineering commission.' It was organized in 1889, but up to July 1, 1927, very little engineering work had been done.

"'What is the future for the engineering profession?

"'Today we find a scarcity of engineering talent. All engineers generally are busy and it is difficult to obtain their services,' he said. 'Like other professions, we have gone into specialization.'"

PHOENIX CHAPTER

Norman E. Clair is President of the Phoenix Chapter, A.A.E. for the fiscal year, and Lloyd LeRaine Pike, First Vice President. Serving as Second Vice President is Glen Smoot, and as Directors, William H. Bartlett, Amos Hoff and Julius Iron. Dan Wier was reappointed Secretary.

N.C.S.B.E.E.

The annual meeting of the National Council of State Boards of Engineering Examiners was held at San Antonio, Texas, on October 29th, 30th and 31st. Philip S. Donnell, formerly Vice President of Oklahoma A. and M. College, and now connected with the City Water Board, San Antonio, Texas, was the official representative of the American Association of Engineers.

Group of Student members A.A.E. at Riverside Junior College, Riverside, California

Books For Engineers

Aluminum in Iron and Steel. Samuel L. Case, Technical Adviser, Battelle Memorial Institute and Kent R. Van Horn, Dir., Research, Aluminum Company of America. Wiley & Sons, Inc. $8.50.

First of the new series of Alloys of Iron Monographs. Book contains a summary of data showing the favorable effect of small amounts of aluminum when added to molten steel as a deoxider, and also presents a correlation of data on the effect of aluminum as an alloying element in steel. An important book in the field it covers.

Gas Turbine Analysis and Practice. Burgess H. Jennings, Prof. and Chairman, Department of Mech. Engrng., Technological Institute, Northwestern University, and Willard L. Rogers, Asst. Prof., Mech. Engrng. McGraw-Hill Book Co. Inc. $8.50.

This book presents a broad, but not detailed, coverage of the operating characteristics, industrial scope, and position that the gas turbine now holds and will attain in coming years. Knowledge of basic thermodynamics and mechanics is necessary to understand the text.

Design of Machine Elements. M. F. Spotts, Prof., Mech. Engrng., Technological Institute, Northwestern University, 2nd ed. Prentice-Hall, Inc. $9.50.

Larger in size than the first edition, containing more problems and worked-out examples; also new material important to working stresses, design of shafting, etc. Several chapters have been rewritten to bring the material up to date.

Theory of Functions of Real Variables. Henry P. Thielman, Prof., Math., Iowa State College. Prentice-Hall, Inc. $6.65.

The purpose of this course is to familiarize the reader with the fundamental concepts and methods of the theory of functions of real variables and to acquaint him with the postulational approach to various mathematical theories. Problems are included. Intended for college students.

Basic Mechanics of Fluids. Hunter Rouse, Prof., Fluid Mechanics and Director, Iowa Institute of Hydraulic Research, and J. W. Howe, Prof. and Head, Department of Mechanics and Hydraulics, State University of Iowa. John Wiley & Sons, Inc. $4.50.

An undergraduate textbook on fluid statics and dynamics, systematically developed from the basic principles of engineering mechanics. Material that is not only basically sound, but also directly useful is exceptionally well presented. Illustrative examples and problems are included.

Elements of Electricity. William H. Timbie, Prof. Emeritus, Electrical Engrng., and Industrial Practice, M.I.T., assisted by Alexander Kusko, Asst. Prof., Electrical Engineering, M.I.T. 4th ed. John Wiley & Sons, Inc. $5.50.

The fourth edition of Professor Timbie's excellent book on the Elements of Electricity reflects the tremendous growth and spread of the electrical engineering industry during the past few years. New illustrations have been added to demonstrate modern practice.

Blue Book of Electrical Estimating. George L. Sherlock, Electrical Research Analyst and Estimating Consultant. $7.75.

The author has prepared a valuable reference book for qualified electrical workers furnishing them authentic data for computing the labor costs on more

ıan 2000 electrical wiring jobs. All in-ɔrmation is in tabular form and blank ages are supplied for special notes and ıformation.

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implified Design of Roof Trusses for Architects and Builders. Harry Parker, Prof., Architectural Construc-tion, University of Pennsylvania. Sec-ond Ed. John Wiley & Sons. $4.00.

The author has made this edition daptable to home study as well as for se in the classroom. Students prepar-g for state board examinations should ıd it adequate for their needs. The econd Edition, in the same efficient anner as the first edition, outlines the asic principles of design and gives the udent a thorough preparation for ad-nced study.

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merican Electricians' Handbook, Croft's. Revised by Clifford C. Carr. 7th Ed. McGraw-Hill Book Co. $10.00.

A reference book for electrical work-s, fully revised in accordance with the 51 National Electrical Code, and con-ining electrical facts and information sed on sound engineering principles—vers everything from fundamentals electricity to practical suggestions remedying the troubles of electrical uipment.

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rveying, Principles and Practice of. Vol. II, Higher Surveying, by Charles B. Breed and George L. Hosmer. 7th ed. John Wiley & Sons, Inc. $7.00.

Extensively revised to bring the ma-ial up to date. Photogrammetric sur-ying and barometric leveling have en entirely rewritten and because of new arrangement of the American utical Almanac, Chapter Two, has en revised to include text and ex-ples illustrating the Greenwich Hour gle method. Vol. 1, 8th edition is de-ed to Elementary Surveying. Both oks, pocket size, flexible binding.

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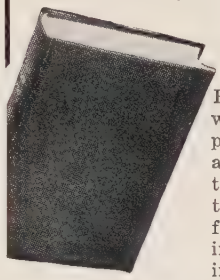

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The object of this book is to give a clear and adequate exposition of the behavior of oscillators and the author has succeeded in so doing. Mathematics have been employed freely where it is helpful. Professor Edison has, as far as practical, made the treatment of each chapter self-sufficient and has included a rather extensive bibliography.

Elements of Propeller and Helicopter Aerodynamics. Daniel O. Dommasch, Chief Engineer and Chief Instructor, Test Pilot Training Div., Naval Air Test Center. Pitman Publishing Corp. $4.50.

Suitable for undergraduate college courses, combining both propeller and helicopter theory in one volume, prepared for a one-semester course.

Theoretical Study of Interphase Mass Transfer. Robert W. Schrage. Columbia Univ. Press. $3.50.

This prize-winning study examines the mechanism of mass transfer across phase boundaries to determine under what conditions, if any, the assumption of thermodynamic equilibrium at phase interfaces is inadequate. This study received the Clarke F. Ansley Award for 1951.

Sewerage and Sewage Treatment. Harold E. Babbitt, Prof., Sanitary Engineering, University of Illinois. John Wiley & Sons, Inc. $8.00. 7th Ed.

A new streamlined edition, exceptionally well prepared, giving up to date information on sewerage and industrial wastes. The book contains new standard specifications for design published by various state Boards of Health, and nomenclature has been extensively revised to conform with the glossary of water and sewage control engineering prepared by the Joint Committee of the American Water Works Association. A "must" book for sanitary engineers.

An Introduction to Statistics. Charles E. Clark, Assoc. Prof. of Math., Emory University. John Wiley & Sons, Inc. $4.25.

This book covers the widely-used topics of statistical inference in a manner that can be easily understood by those who need to apply such inferences to research work. It is an elementary introduction to statistics featuring an exposition of statistical inference that can be followed by those who do not have a mastery of high school algebra. The statistical approach offered here is distinctly new in emphasizing ideas rather than techniques.

Mechanical Engineering Thermodynamics. David A. Mooney, Principal Mech. Engr., Jackson and Moreland, Engineers. Prentice-Hall, Inc. $9.35.

An introductory book on the principles of thermodynamics and their applications in mechanical engineering. The reader is presumed to have a knowledge of college physics and math. Thermodynamics is treated as a logical formulation of facts known from experience. Sufficient descriptive matter

heat engines is included for those ho have not studied the subject.

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echanics of Materials. Seibert Fairman, Prof., Engineering Mechanics, and Chester C. Cutshall, Prof., Engineering Mechanics, Purdue Univ. John Wiley & Sons, Inc. $5.75.

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ectric Control Systems. Richard W. Jones, Prof., Electrical Engineering, Northwestern Technological Institute. 3rd ed. John Wiley & Sons. $7.75.

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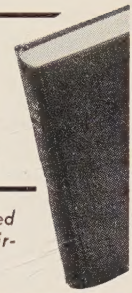

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Corrosion Testing Procedures, F. A. Champion, Ph.D., A.R.C.S., F.I.M. John Wiley & Sons, Inc. $6.25.

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Mechanics of Vibration, Holger M. Hanson, Prof., Engrg. Mechanics, and Paul F. Chenea, Assoc. Prof. Engrg. Mechanics, both at the University of Michigan.

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Engineering in Public Health, Harold E. Babbitt, Prof., Sanitary Engrg., University of Illinois. McGraw-Hill Book Co., Inc. 1st ed. $8.00.

A complete picture of the work of the engineer in public health is given by the author, included, in addition to its thorough coverage of important details, such recent advances as new pesticides, poisons and fumigants, the new diatomite filter, recent theories on the nature of odor and its control, the fluoridation of water, etc. An excellent book by a well-known author.

Metallurgy for Engineers, John Wulff, Howard F. Taylor and Amos J. Shaler, Dept. of Metallurgy, M.I.T. John Wiley & Sons, Inc. $6.75.

Written as a textbook for engineering students, it also serves as a self-teaching book for practicing engineers. First part of the book explains the concepts and principles that underlie metal processing from ingots to finished articles of commerce; the second part deals with the processes themselves.

Water, Sir Cyril S. Fox, D. Sc., F.G.S., past president, Mining, Geological and Metallurgical Institute of India. The Philosophical Library. $8.75.

The author has provided the reader with an outline of the Science of Water, both in the academic and practical aspects of the subject and has included details regarding its characteristics, its occurrence and its utilization. 148 pp.

The Nature of Some of our Physical Concepts, P. W. Bridgman, Prof., Physics, Harvard University, and a winner of the Nobel Prize. Philosophical Library. $2.75.

The book contains three lectures given at the University of London in 1950. The particular object was to distinguish between the "instrumental" and the "paper and pen" component of the operations of the physicist.

Theory of Vibrations for Engineers, E. B. Cole, M. Sc., M. I. Mech. Engr., Lecturer in M.E., The University of Liverpool. Crosby Lockwood & Son, Ltd. $3.00. Second ed.

Because the first edition was destroyed by an enemy bomb, the author was given the opportunity of revising and enlarging the book, and an excellent treatise was the result on the theory of vibrations.

Direct-Current Machinery, Charles S. Siskind, Assist. Prof. of Electrical Engrg., Purdue. McGraw-Hill Book Co., Inc. $6.00.

An excellent text for the student. Every topic is carefully discussed. Mathematical derivations are rigid and complete and derived equations are used throughout the text to stress the importance of quantitative analyses, as well as to augment discussions. Sketches and wiring diagrams are given special treatment.

ainless Steel Handbook, Allegheny Ludlum Steel Corporation.

Completely rewritten and greatly exnded to meet the needs of America's pidly growing industry. About forty pes of stainless are treated in this volne. A useful book for those interested the subject treated.

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rength of Materials, Frank J. McCormick, Prof. of Applied Mechanics, Kansas State College. The MacMillan Co. $3.75.

The book is intended to give students good understanding of the subject en though his mathematical preparan does not extend beyond trigonome-. It shows him how to use formulas, d also an understanding of the sigicance of the formulas and of the ysical phenomena behind them. Beam flections is discussed more fully than most textbooks written at this level.

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ork Measurement, New Principles and Procedures, Adam Abruzzi, Asst. Prof. Stevens Institute of Technology. Columbia University Press. $6.00.

The book makes available objective ocedures and criteria for deciding en a process can be considered standlized and for determining when elent and motion standard data have dictive value. It shows how precise imates and predictions can be made out the production rates of workers d operations, and how to develop proction standards known to be attainle by the workers. Illustrated with ny interesting tables and graphs.

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sic Mathematics for Technical ourses, 2nd ed., Clarence E. Tuites, .S., E.E., Inst. Electricity and Mathematics, Rochester Institute of Technology. Prentice-Hall, Inc. $5.

textbook designed for technical intutes and the junior college field. The k provides the mathematical training is pertinent and essential in the ly of technical subjects. A large numof problems are included; vectors components are treated at length. v to use a slide rule is presented in first chapter.

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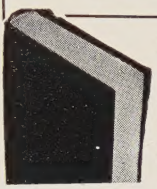

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Consciousness and Behavior, James T. Culbertson, School of Philosophy, Univ. of So. Calif. Wm. C. Brown Company. $4.25.

The book consists of two parts: the neural analysis of behavior or the study of relations between input, throughput and output, and the neural analysis of sense data or the study of the relations between input, throughput and consciousness. The text is in mimeographed form and has been used by the author in a course called the Philosophy of Psychology, open to juniors, seniors, and graduate students.

Pressworking of Metals, C. W. Hinman, Former Chief of Jig and Fixture Designing, Western Electric Co., Chief Tool Engineer, Automatic Electrical Co. McGraw-Hill Book Co. 2nd ed. $8.50.

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Simply written, with a fresh illustrative approach to the subject. Numerous illustrations and problems in science and engineering have been used to stimulate interest. A carefully and thoughtfully prepared textbook.

Transients in Power Systems, Harold A. Peterson, Prof., El. Engrg., Univ. of Wisconsin. John Wiley & Sons. $6.50.

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Fuel Oil Manual, Paul F. Schmidt, Chief Chemist, Allied Oil Company, Inc. Industrial Press. $3.50.

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Highway Research Board, Proceedings of the Thirty-First Annual Meeting, January, 1952. Edited by Fred Burggraf, W. N. Carey, Jr., and Walter J. Miller. $7.50.

The book is dedicated to Roy W. Crum, who has served as director of the Highway Board since 1928.